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tablishment, and bring to it a limited number of the ablest investigators and student assistants, it would thereby give, in my judgment, the most direct and powerful stimulus to research which could be rendered.

The promotion of research by assisting investigators in existing institutions constitutes a means which will doubtless receive the most careful consideration at the hands of those who direct the Carnegie Institution. Undoubtedly great possibilities for stimulating research are to be found in our universities and colleges. Nevertheless the wise use of funds in this way is beset with many difficulties. In most American institutions of learning the conditions which obtain are not favorable to the development of the research spirit, and it would be entirely possible to expend the entire income of the Carnegie Institution in this way and obtain no other results than those of a mediocre and routine nature. In no other direction will the managers of the Institution be called upon for a greater measure of that good judgment which couples keen discrimination with sympathetic appreciation, than in their endeavor to assist research in existing institutions.

The third line of activity to which I have alluded has its peculiar difficulties also, though of a different sort from those just referred to.

An institution founded for the promotion of research will not be content to get in touch only with those already fairly known and started in the work of investigation. It will seek to introduce the new sciences as well as to stimulate the old to new triumphs. It will desire to discover the discoverer, to keep a door always accessible to the unknown and obscure investigator. By such a door an army of cranks will seek to enter, but so also will the unheralded genius. Now and then a Thomson, an

Edison or a Marconi will knock for admission; mayhap a Henry or a Pasteur. It is here—in the endeavor to come in touch with the unknown struggling man of genius—that those who direct the Institution will find at the same time their keenest disappointments and their greatest successes; and here again is a wise sympathy no less needed than a keen scrutiny.

Of the three plans of procedure here suggested the first is, to my thinking, the prop and the inspiration of the other two.

If the Carnegie Institution succeeds not only in bringing to accomplishment certain useful researches, but also in awakening the spirit of research itself, its success will have momentous consequences for the whole world. No other project has at this moment so fully the attention of all men of science. In their effort to execute the delicate and important task committed to them the directors of the Institution are sure to receive the cordial cooperation, as they already have the keen attention, of those who are interested in science and in the progress of men.

HENRY S. PRITCHETT.

#### MEMBERSHIP OF THE AMERICAN ASSOCIATION.

THE following is a list of persons who have completed membership in the Association during August, 1902.

Thos. L. Armitage, M.D., Physician and Surgeon, Princeton, Minn.

Oscar P. Austin, Chief of Bureau of Statistics, Treasury Department, Washington, D. C.

Theodore Baker, Box 44, Haskell, N. J.

Howard J. Banker, Professor of Biology, Southwestern Normal School, California, Pa.

John Barlow, State College, Kingston, R. I.

John E. Best, M.D., Physician, Arlington Heights, Ill.

Mrs. Josephine Hall Bishop, 2309 Washington St., San Francisco, Cal.

James Hall Bishop, 2309 Washington St., San Francisco, Cal.

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Flemming Carrow, M.D., University of Michigan, Ann Arbor, Mich.

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Ernst Fahrig, Chief of Laboratories, Philadelphia Commercial Museums, Philadelphia, Pa.

Geo. H. Gibson, 268 Shady Ave., E. E., Pittsburgh, Pa.

Ozni P. Hood, Professor of Mechanical and Electrical Engineering, School of Mines, Houghton, Mich.

G. Wilbur Hubley, Electric Light Co., Louisville, Ky.

Herman C. Jungblut, M.D., Physician, Tripoli, Iowa.

Orran W. Kennedy, General Superintendent, Frick Coke Co., Uniontown, Pa.

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Daniel Lichty, M.D., Physician, Masonic Temple, Rockford, Ill.

Ernest H. Lindley, Professor of Psychology, University of Indiana, Bloomington, Ind.

Robert E. Lyons, Professor of Chemistry, University of Indiana, Bloomington, Ind.

George C. Martin, Assistant Geologist, Maryland Geological Survey, Johns Hopkins University, Baltimore, Md.

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Robert W. Stewart, M.D., Physician, The Ortiz, Cincinnati, Ohio.

Lucius S. Storrs, Geologist, N. P. Ry. Co., St. Paul, Minn.

Henry L. Ward, Secretary Board Trustees, Public Museum, Milwaukee, Wis.

Homer D. Williamson, 133 W. 10th Ave., Columbus, Ohio.

Chas. E. A. Winslow, Instructor of Biology, Mass. Inst. Tech., Boston, Mass.

Walter Wyman, M.D., Surgeon-General, Public Health and Marine Hospital Service, Washington, D. C.

#### SCIENTIFIC BOOKS.

*The Elements of Physical Chemistry.* By HARRY C. JONES. New York, The Macmillan Company, 1902. 14 x 21. Pp. x + 565. Bound, \$4.

In this, the most pretentious book on physical chemistry which has appeared in English, the author has not departed from the orthodox German school in arrangement of the subject matter; in the treatment, however, many passages show a style which is peculiarly his own. A brief review will show what he believes should be taught in a university course in physical chemistry.

The reader is introduced to the atom and the molecule—the fundamental ideas of the chemist; the laws of combination, determination of atomic weights and then the periodic law are given in detail. In separate chapters are then discussed the various laws, theories and disconnected facts bearing on the physical properties of pure gases, liquids and solids. There is here given much of the work which, prior to 1885, had engaged the attention of chemical philosophers—the discovery of relations between physical properties and constitution. These chapters will afford interesting reading to many who wonder why the chemist requires all the physics he can obtain. There is little in these chapters, however, illustrative of the use of these properties in analysis.

In the fifth section the subject of solutions is considered. This chapter deals with the classical work of Pfeffer on osmotic pressure, of van't Hoff on the analogy between osmotic and gas pressures, of Raoult on the vapor pressures, the origin of the theory of electrolytic dissociation and the arguments in its favor, and a discussion of properties of dilute solutions.

The thirty pages which are devoted to thermochemistry indicate the development of the subject and give methods and results. Electrochemistry requires and merits four times this space for its treatment, since the remarkable